

New records of bees for the French West Indies (Hymenoptera, Apoidea, Anthophila)

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Abstract. – Four species are newly recorded from Guadeloupe and Martinique: *Mesocheira bicolor* (Fabricius, 1804) is recorded for the first time from the Lesser Antilles, *Centris smithii* Cresson, 1879, *Megachile lanata* (Fabricius, 1775) and *Coelioxys abdominalis* Guérin-Méneville, 1844, from Martinique. Five other species, already known from the Lesser Antilles, are newly recorded from Les Saintes archipelago. These new records expand the recorded fauna and our current knowledge of distribution and their ecology.

Résumé. – Nouveaux signalements d'Abeilles aux Antilles françaises (Hymenoptera, Apoidea, Anthophila). Quatre espèces sont nouvellement citées de Guadeloupe et de Martinique : *Mesocheira bicolor* (Fabricius, 1804) est signalé pour la première fois des Petites Antilles, *Centris smithii* Cresson, 1879, *Megachile lanata* (Fabricius, 1775) et *Coelioxys abdominalis* Guérin-Méneville, 1844, sont nouvellement citées de la Martinique. Cinq autres espèces, déjà recensées dans cette région, sont nouvellement citées de l'archipel des Saintes. Ces nouvelles données accroissent la liste des espèces, mais également nos connaissances sur leur distribution et leur écologie.

Keywords. – Apoidea, faunistics, Caribbean.

Knowledge of regional species diversity is an essential step toward conservation (DANKS, 1994). Repeated surveys in the French West Indies (MEURGEY, 2014, 2016 ; MEURGEY *et al.*, 2014 ; MEURGEY & QUESTEL, 2015 ; MEURGEY & DUMBARDON-MARTIAL, 2015) provide a comparison of historical records to current biodiversity. Although these records have been compiled in databases, details have not yet been documented in print. Collections of Lesser Antillean bees from the early 20th century are scarce, with native bees being rarely collected in the Lesser Antillean Islands before 1970. Many of the specimens from these collections are housed at the Nantes Museum of Natural History (NMNH), Institut National de la Recherche Agronomique (INRA) in Guadeloupe and Musée du Père Pinchon in Martinique and have been restudied and databased.

The new records from recent field surveys of wild bees by SHNLH and FREDON researchers, in both agricultural and natural environments, show that we are still discovering basic information about their diversity and distribution in the Lesser Antilles. Here, we report and annotate records of bees from Guadeloupe and Martinique, including three newly reported species from Martinique and six new islands records from Les Saintes archipelago, along with additional noteworthy records selected for their novelty and interest from a biogeographical point of view. Specimens collected by the late Father Pinchon (1913-1980) and housed in Martinique contain records from the mid-20th century and are added to this work.

MATERIAL AND METHODS

New data presented in this paper are derived from recent SHNLH, FREDON and *Martinique Entomologie* Association surveys both in the field and consultation of public collections. Additional

historic and recent records are from the insect collections at Musée du Père Pinchon (Martinique). Voucher specimens have been deposited in the Muséum national d'Histoire naturelle, Paris, and in the FREDON collection in Martinique. The following list treats families in the same order as they appear in REFTAX from the Muséum national d'Histoire naturelle, Paris (v.11, 2017: <https://inpn.mnhn.fr/telechargement/referentielEspece/taxref/11.0/menu#>). Genera and species are alphabetical under the families. Nomenclature generally follows MICHENER (2007).

RESULTS

Family **Apidae** Latreille, 1802

Subfamily **Apinae** Latreille, 1802

Tribe **Ericrocidini** Cockerell & Atkins, 1902

Genus **Mesocheira** Lepelletier & Audinet-Serville, 1825

Mesocheira bicolor (Fabricius, 1804) (fig. 1-2)

Material examined. – Martinique, Rivière-Pilote, Morne Camp, ZNIEFF n°48, 14°30'40.51"N - 60°53'49.21"W, 250 m alt., 29.V.2016, 1 ♀, *E. Dumbardon-Martial leg.* (coll. FREDON).

New Lesser Antillean record. Known from Central America, Mexico, Guyana, Argentina (MOURE *et al.*, 2012), Trinidad and also in the Greater Antilles: Cuba, Jamaica, Dominican Republic (GENARO, 2007; PÉREZ-GELABERT, 2008). This species is unmistakable and characterised by a plate-like, posteriorly directed, mesoscutellar processes which separate both sexes from all other Ericrocidini genera. This species is known to attack species of *Centris* (*Hemisiella*) (BARTIRA & GAROFALO, 2000).

Tribe **Centridini** Cockerell & Cockerell, 1901

Genus **Centris** Fabricius, 1804

Centris (Hemisiella) barbadensis Cockerell 1939

Material examined. Martinique: Saint-Pierre, 12.VI.1948, 1 ♀; Étang Fabre, 10.VI.1948, 1 ♀; Étang Fabre, 20.VI.1948, 2 ♀; Anses d'Arlet, 25.VII.1965, 3 ♀ (*Pinchon leg.* and coll.).

Regional endemic, known from Barbados, Saint-Vincent, Grenadines (MOURE *et al.*, 2012) and Martinique (MEURGEY & DUMBARDON-MARTIAL, 2015).

Centris (Hemisiella) lanipes (Fabricius, 1775)

Material examined. – Les Saintes: Terre-de-Bas, Petites Anses, 15°51'15.5"N - 61°38'25.4"W, 129 m alt., 27.VII. 2016, 25 ♀, *F. Meurgey* (NMNH). Guadeloupe: Lamentin, VIII.1948, 1 ♀; Marie-Galante: Fréchy, 21.VIII.1953, 1 ♀ (*Pinchon leg.* and coll.).

New record for Les Saintes. In the West Indies, known from Cuba, Haiti, Dominican Republic (MOURE *et al.*, 2012) and Guadeloupe (MEURGEY, 2014).

Centris (Centris) smithii Cresson, 1879

Material examined. – Martinique: a single female observed and photographed by the second author at La Caravelle Natural Preserve on *Lonchocarpus roseus* DC. (Fabaceae). This specimen shows yellow abdominal transverse bands, which are characteristic of *C. smithii*, but voucher specimens are needed to confirm identification. Upon further studies and specimens for examination, we consider that this species is a new island record.

In the West Indies, known from Cuba, Haïti, Saint Barthelemy (MEURGEY & QUESTEL, 2015), Saint Martin and Guadeloupe (La Désirade) (MEURGEY *et al.*, 2014).



Fig. 1-2. – *Mesocheira bicolor* (Fabricius), ♀ from Martinique (red arrows indicate mesoscutellar process). – 1, Dorsal view. – 2, Side view. Scale bar = 5 mm. (Photo: F. Meurgey).

Centris (Centris) versicolor (Fabricius, 1775)

Material examined. Guadeloupe: Lamentin, VIII.1948, 1 ♂, 1 ♀; Marie-Galante: Fréchy, 21.VIII.1953, 1 ♀; Martinique: Fontaine Didier, Fort-de-France, 30.V.1948, 1 ♂; Coulée de lave, 24.IV.1955, 1 ♂ (all Pinchon leg. and coll.).

Caribbean endemic (MOURE *et al.*, 2012).

Tribe **Eucerini** Latreille, 1802

Genus **Melissodes** Latreille, 1829

Melissodes aff. martinicensis Cockerell, 1917

Material examined. – Martinique: Le Prêchœur, 20.XII.1953, 1 ♀, Pinchon leg. and coll. (Musée Pinchon).

Endemic from Martinique? (LUTZ & COCKERELL, 1920; LABERGE, 1956; MOURE *et al.*, 2012). During our studies on the island of Guadeloupe in 2014-2015, we caught an extensive series of *Melissodes*, which were not identified. Upon comparing these specimens with Smith's original description of *M. rufodentata* Smith, 1854, and Cockerell's description of *M. martinicensis*, and extensive series of specimens from Martinique and Dominica, it seems that the two taxa would belong to the same species, *M. rufodentata*, which is also recorded from northern South America and Trinidad (MOURE *et al.*, 2012).

Tribe **Exomalopsini** Michener, 1944

Genus **Exomalopsis** Spinola, 1853

Exomalopsis (Exomalopsis) analis Spinola, 1853

Material examined. – Guadeloupe: Lamentin, VIII.1948, 1 ♀, Pinchon leg. and coll. (Musée Pinchon). Known from USA, South America and West Indies (MOURE *et al.*, 2012).

Exomalopsis (Exomalopsis) similis (Cresson, 1865)

Material examined. – Guadeloupe: Lamentin, VIII.1948, 1 ♀, Pinchon leg. and coll. (Musée Pinchon). Known from USA, South America and the West Indies (MOURE *et al.*, 2012).

Tribe **Xylocopini** Latreille, 1802Genus **Xylocopa** Latreille, 1802

Known from Anguilla, Montserrat, Guadeloupe, Dominica, Martinique, Saint Vincent and the Grenadines (MOURE *et al.*, 2012).

Xylocopa (Neoxylocopa) caribea Lepeletier, 1841

Material examined. – Les Saintes: Terre-de-Bas, Petites Anses, 15°51'15.5"N - 61°38'25.4"W, 129 m alt., 27.VII.2016, 1 ♀, *F. Meurgey* (NMNH).

New record for Les Saintes.

Xylocopa (Neoxylocopa) fimbriata Fabricius, 1804

Material examined. – Martinique: Anse d'Arlet, 25.II.1965, 4 ♂; Fort-de-France, 20.XII.1975 (all from Musée Pinchon).

Known from Mexico, Central America, northern South America, the West Indies and Trinidad (MOURE *et al.*, 2012).

Xylocopa (Neoxylocopa) mordax Smith, 1874

Material examined. – Guadeloupe: Lamentin, VIII.1948, 1 ♀, *Pinchon leg.* (Musée Pinchon). Les Saintes: Terre-de-Bas, Petites Anses, 15°51'15.5"N - 61°38'25.4"W, 129 m alt., 27.VII. 2016, 1 ♀, *F. Meurgey* (NMNH). Saint Barthelemy: 1992, 1 ♀, *Pinchon leg.* (Musée Pinchon).

New record for Les Saintes. Caribbean endemic. Known from Jamaica, Puerto Rico, Saba, Saint Eustatius, Saint Kitts and Nevis Islands, Saint Martin, Saint Barthelemy, Montserrat, Guadeloupe (GENARO & FRANZ, 2008; PEREZ-GELABERT, 2008; MOURE *et al.*, 2012; MEURGEY, 2014).

Family **Megachilidae** Latreille, 1802Subfamily **Megachilinae** Latreille, 1802Tribe **Megachilini** Latreille, 1802Genus **Coelioxys** Latreille, 1809**Coelioxys (Neocoelioxys) abdominalis** Guérin-Méneville, 1844

Material examined. – Martinique: Cap Chevalier, Saint-Anne, 12.VII.1954, 1 ♀, *Pinchon leg.* and coll. (Musée Pinchon); Petit Macabou, Vauclin, 4.X.2015, 1 ♂, *E. Dumbardon-Martial leg.* (NMNH); Petit Macabou, Vauclin, 21.VIII.2016, 1 ♀, captured flying near a nest excavated by *Megachile luctifera* in the chalky wall of a chapel (chapelle de la Vierge des marins), *E. Dumbardon-Martial* (coll. FREDON).

New record for Martinique. Native from the Americas, recorded on most of Greater Antillean islands (GENARO, 2007; GENARO & FRANZ, 2008; PEREZ-GELABERT, 2008; MOURE *et al.*, 2012) and most of the Lesser Antillean islands to date: Guadeloupe (MEURGEY, 2016), Dominica (CRAWFORD, 1914), Saint Vincent and the Grenadines (ASHMEAD, 1900; COCKERELL, 1938), Grenada (WOODRUFF *et al.*, 1998) and Barbados (COCKERELL, 1937).

Coelioxys (Neocoelioxys) rufipes Guérin-Méneville, 1844

Material examined. – Les Saintes: Terre-de-Bas, Petites Anses, 15°51'15.5"N - 61°38'25.4"W, 129 m alt., 27.VII. 2016, 1 ♀, *F. Meurgey* (NMNH).

New record for Les Saintes. Known from Bahamas, Cuba (MOURE *et al.*, 2012) and Guadeloupe (MEURGEY, 2014).

Genus *Megachile* Latreille, 1802*Megachile (Pseudomegachile) lanata* (Fabricius, 1775)

Material examined. – Guadeloupe: Lamentin, VII.1948, 1 ♀, *Pinchon leg.* and coll. (Musée Pinchon). Les Saintes: Terre-de-Bas, Petites Anses, 15°51'15.5"N - 61°38'25.4"W, 129 m alt., 27.VII.2016, 1 ♀, *F. Meurgey* (NMNH). Martinique : L'Espérance, 12.IX.1948, 1 ♀, coll. Père Pinchon (Musée Pinchon); Saint-Anne, Savane des Pétrification, 14.VIII.2016, 1 ♀, *E. Dumbardon-Martial* (Coll. FREDON). Grenadines: Union Island: 18.X.1991, 1 ♀; 1992, 2 ♀, 1 ♀, Père Pinchon coll. (Musée Pinchon).

New record for Les Saintes, Martinique and Grenadines. This Old-World species is native to India and Africa and has spread throughout the West Indies where it is known from Jamaica, Puerto Rico, Saint Vincent and the Grenadines (MOURE *et al.* 2012), Guadeloupe (MEURGEY, 2014).

Megachile (Pseudocentron) luctifera Spinola 1841

Material examined. – Martinique: L'Espérance, 12.IX.1948, 1 ♀; Trois-Îlets, 6.IV.1953, 1 ♀; Le Prêcheur, 20.XII.1953, 1 ♀, cap Chevalier, Saint-Anne, 12.VII.1954, 2 ♀; îlet Hardy, 5.VII.1965, 5 ♀. Saint-Barthelemy: Cul de sac, 16.VII.1953, 4 ♀. (All *Pinchon leg.* and coll.). Nest dug in limestone and filled with pieces of leaves.

This species originating from the mainland is absent from Guadeloupe and Dominica and only recently recorded from Saint-Barthelemy (MEURGEY & QUESTEL, 2015) and Martinique (MEURGEY & DUMBARDON-MARTIAL, 2016), where it is relatively common.

Megachile (Pseudocentron) vitraci Pérez, 1884

Material examined. – Les Saintes: Terre-de-Bas, Petites Anses, 15°51'15.5"N - 61°38'25.4"W, 129 m alt., 27.VII.2016, 1 ♀, *F. Meurgey* (NMNH). Saint-Barthelemy: Colombier, 27.X.2015, 1 ♂, *E. Dumbardon-Martial* (Coll. FREDON); Colombier, 27.X.2015, 1 ♂, *E. Dumbardon-Martial* (NMNH). Unlabelled specimens: 2 ♂, *Pinchon leg.* (Musée Pinchon).

New record for Les Saintes and Saint-Barthelemy. Common. Regional endemic. Known from Guadeloupe and Martinique (MEURGEY, 2014; MEURGEY & DUMBARDON-MARTIAL, 2016).

Megachile (Callomegachile) rufipennis (Fabricius, 1793)

Material examined. – Martinique: Fort-de-France, 1.V.1948, 1 ♀, *Pinchon leg.* and coll.; Fort-de-France, 7.II.1949, 1 ♀, *Pinchon leg.* (Musée Pinchon).

Introduced species originating from Afrotropical region, probably during slave trade (EICKWORT, 1970; MITCHELL, 1980). Relatively common in Guadeloupe (MEURGEY, 2014), only two specimens are known from Martinique, both in the Father Pinchon collection, dated from the early 1940s. We failed to find this species during our recent field studies (MEURGEY & DUMBARDON-MARTIAL, 2016; PIERRE & DUMBARDON-MARTIAL, 2016) and the possibility that it is now extinct from that island is to be considered.

DISCUSSION

These new records bring the total number of specimens recorded from Martinique to 18 and increase our knowledge on the distributional pattern of species from Guadeloupe and adjacent islands. Actually, the bee fauna of the French West Indies contains 25 species belonging to 12 genera distributed as follows: Megachilidae 7 (28%), Apidae 17 (68%) and Halictidae estimated 11 (44%). These species are unequally distributed within the islands (table 1). Among these species, 4 (16%) are native to the Old World and 10 (40%) are shared with the continental New World. Fourteen species (56%) are restricted to the Caribbean in distribution, of which nine (36%) are restricted to the Lesser Antilles (table I).

Table 1. – Bee species distribution within the French West Indies. From MEURGEY (2014), MEURGEY & QUESTEL (2015), MEURGEY & DUMBARDON (2015), MEURGEY (2016). St Mar: Saint Martin; St Barth: Saint Barthelemy; Gua-arch: Guadeloupe archipelago; De: Désirade, St: Les Saintes; Mg: Marie-Galante; Gua: Guadeloupe; Mar: Martinique; LA: Lesser Antilles; GA: Greater Antilles; NW: New World; OW: Old World.

Species/Islands	St Mar	St Barth	Gua-arch				Mar	LA	GA	NW	OW
			De	St	Mg	Gua					
<i>Lasioglossum spp</i>	-	-	-	-	-	1	-	-	-	-	-
<i>Anthophora tricolor</i>	-	-	1	-	-	-	-	x	x	-	-
<i>Apis mellifera</i>	1	1	1	1	1	1	1	x	x	x	x
<i>Centris barbadensis</i> **	-	-	-	-	-	-	1	x	-	-	-
<i>Centris decolorata</i> *	-	1	1	-	-	1	1	x	x	-	-
<i>Centris lanipes</i>	-	-	1	-	-	1	-	x	x	x	-
<i>Centris smithii</i>	1	1	1	-	-	-	1	x	x	x	
<i>Centris versicolor</i> *	-	1	1	1	1	1	1	x	x	-	-
<i>Coelioxys abdominalis</i>	-	-	-	-	1	-	1	x	x	x	-
<i>Coelioxys rufipes</i> **	-	-	-	1	-	1	-	x	-	-	-
<i>Exomalopsis analis</i>	-	-	-	-	-	1	1	x	x	x	-
<i>Exomalopsis bartschi</i> ***	-	-	-	-	-	1	-	x	-	-	-
<i>Exomalopsis similis</i>	-	-	-	-	-	1	1	x	x	x	-
<i>Megachile concinna</i>	-	1	-	-	-	1	1	x	x	x	x
<i>Megachile lanata</i>	-	1	-	1	-	1	1	x	x	x	x
<i>Megachile luctifera</i>	-	1	-	-	-		1	x	x	x	-
<i>Megachile rufipennis</i>	-	-	-	-	-	1	1	x	x	-	x
<i>Megachile vitraci</i> **	-	1?	-	1	-	1	1	x	-	-	-
<i>Melipona variegatipes</i> ***	-	-	-	-	-	1	-	x	-	-	-
<i>Melissodes rufodentatus</i>	-	-	-	-	-	1	1	x	-	x	-
<i>Melissodes trifasciatus</i> **	-	-	-	-	-	1	-	x	x	-	-
<i>Mesoplia azurea</i> *	-	-	-	-	1	1	1	x	-	-	-
<i>Mesocheira bicolor</i>	-	-	-	-	-		1	x	x	x	-
<i>Xylocopa caribea</i> *	-	-	-	1	1	1	1	x	-	-	-
<i>Xylocopa fimbriata</i> *	-	-	-	-	-	1	1	x	-	-	-
<i>Xylocopa mordax</i> **	1	1	-	1	1	1	-	x	x	-	-
Total	3	9	6	7	6	20	18	24	15	10	4

Contribution of the father Pinchon's insect collection to the general knowledge on the French West Indian bee fauna. – Father Pinchon (1913-1980) integrated the Fathers of Saint-Esprit community, and obtained his doctoral degree in Sciences. He then was appointed as a teacher at diocesan school of Fort-de-France in 1945. He devoted a large part of his life to study poorly known Natural Sciences in the French West Indies. Father Pinchon worked extensively in the field and gathered a large diversity of insects. He first described the life history of many species and published several school books and scientific works. Today the Father Pinchon's insect collection is composed over 200 boxes covering all major insect orders. Several species remain to be studied and described.

This historical collection gives a general picture of the French West Indian bee fauna in the mid-20th century. It contains twelve species of bees (45 specimens) collected by Father Pinchon from 1948 to 1975, as follows: *Xylocopa fimbriata*, *X. mordax*, *Megachile rufipennis*, *M. lanata*, *M. luctifera*, *M. vitraci*, *Centris barbadensis*, *C. lanipes*, *C. versicolor*, *Melissodes*

martinicensis, *Exomalopsis analis*, *E. similis*, *Coelioxys abdominalis*. Since that time, all of these species were recently collected on Saint Barthelemy, Guadeloupe and Martinique (MEURGEY, 2014; MEURGEY & QUESTEL, 2015; MEURGEY & DUMBARDON-MARTIAL, 2016; PIERRE & DUMBARDON-MARTIAL, 2016), except *Megachile rufipennis* for which we failed to obtain recent information in Martinique.

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